42-045-00070
PA0000293037
Erin Willard

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

MEMO

TO Heather Henry
Air Quality Specialist
Southeast Regional Office

FROM Kenneth M. Kuschwara KMK
Environmental Chemist 2
Source Testing Section

THROUGH Charles J. Zadakis RJS for CJZ
Environmental Program Manager
Division of Source Testing and Monitoring

Richard P. Szekeres, M.S. RPS
Environmental Group Manager
Source Testing Section

DATE October 15, 2019

RE Source Test Audit Review
Monroe Energy LLC
Trainer Facility
Diesel HTU Heater (Source ID: 736)
Trainer Borough, Delaware County
Title V Operating Permit: #23-00003; RACT 2
eFACTS: 2929834 PFID: 293037
eFACTS Inspection Result: AENO

MESSAGE:

Monroe Energy LLC operates a cylindrical, bottom-fired, natural-draft Diesel HTU Heater at its Trainer refinery. The heater burns a mixture of fuel gas and air. A manually-adjusted stack damper is used to control the flow of combustion air and flue gas through the heater. Five burners are fired to heat the process fluid running through two independent coils inside the heater. The diesel unit processes a mixture of straight run diesel and light cycle oil (LCO) in order to produce ultra-low sulfur diesel. Emissions discharge is through a 39-feet circular exhaust stack with a 53" inner diameter.

On May 6, 2019, Weston Solutions, Inc. conducted an emission test for compliance in the Diesel HTU Heater exhaust to determine the emissions of nitrogen oxides (NO_x). Testing was conducted in accordance with EPA Method 7E. Additionally, EPA Method 19 was applied to determine mass emission factors. The NO_x results are acceptable to the Department of Environmental Protection (DEP) as representative of emissions at operating conditions like those during testing and may be used for compliance purposes. The following is a summary of data presented in the test report:

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Environmental Chemist 2
Source Testing Section

THROUGH Charles J. Zadakis CJZ
Environmental Program Manager
Division of Source Testing and Monitoring

Richard P. Szekeres, M.S. RPS
Environmental Group Manager
Source Testing Section

DATE August 30, 2019

RE Source Test Audit Review
Monroe Energy LLC
Trainer Facility
FCC Unit (Source ID: 101)
Controlled by CO Boiler (Source ID: C01),
FCCU Selective Non-Catalytic Reduction System (Source ID: C101-3),
Research Cottrell ESP (Source ID: C02),
FCCU Wet Gas Scrubber (Source ID: C101-4)
Trainer Borough, Delaware County
Title V Operating Permit: #23-00003
eFACTS: 2926420 PFID: 293037
eFACTS Inspection Result: NOVIO

MESSAGE:

Monroe Energy LLC operates a 54,000 barrel per day fluid catalytic cracking unit (FCCU) at their Trainer refinery. The feed for the FCCU enters a gas-fired preheater before joining regenerated catalyst, which is transported into the reactor. The catalyst particles contact the hydrocarbon vapors and long chain hydrocarbons are "cracked" into smaller molecules, primarily in the gasoline range. Coke is deposited on the catalyst during the reaction. Cyclones in the top of the reactor separate catalyst from the hydrocarbon reaction products and return it to the reactor. Catalyst is gravity fed into a line through which air flows, transporting the catalyst into the regenerator. In the regenerator, coke on the catalyst is combusted at approximately 1,350°F. Internal 2-stage cyclones in the top of the regenerator remove most of the entrained catalyst and return it to the catalyst bed. The flue gas exits the regenerator and passes through a carbon monoxide (CO) boiler. The flue gases then exit the CO boiler and are split prior to an electrostatic precipitator (ESP) with two parallel passes. The emissions from the ESP are exhausted via separate breeches to a wet gas scrubber into a common final stack to the atmosphere.

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MEMO

TO Heather Henry
Air Quality Specialist
Southeast Regional Office

FROM William Schneider CJS FOR WS
Source Testing Section

THROUGH Charles Zadakis CJZ
Environmental Program Manager
Division of Source Testing and Monitoring

Rick Szekeres RRS
Environmental Group Manager
Source Testing Section

DATE July 17, 2019

RE Source Test Audit Review
Monroe Energy, LLC
Kerosene / Heavy Catalyst Naphta HTU feed heater (Source ID 735)
Trainer Borough, Delaware County
Title V Operating Permit No. 23-00003
eFACTS: 2631853 PFID: 293037
eFACTS Inspection Result: *AEYES*

MESSAGE:
Monroe operates the Kerosene (Kero)/Heavy Catalyst Naphta (HCN) HTU feed heater as part of its refinery facility. This heater, rated at 23 MMBtu/hr, includes a pre-heater, is fired with refinery fuel gas (RFG), and is used to provide heat for the hydrotreating unit (HTU) process. The HTU is used to reduce the sulfur in the feed provided from the FCCU, to meet the sulfur specifications for gasoline. Additional details for the Kero/HCN feed heater and the HTU are provided in the test report.

Testing was conducted at the outlet stack of the Kero/HCN feed heater for nitrogen oxides (NOx as NO_2; EPA Method 7E) and carbon monoxide (CO; EPA Method 10) on June 20, 2017. This was a retest for NOx following other testing programs at this source on December 15, 2016 and March 1, 2017 (see previous review memos for the details of those testing programs). The cover letter from the facility indicated that a previously approved protocol was utilized, along with an amended protocol, submitted to also include CO testing. I believe the approved protocol was in reference to a September 2016, Department of Environmental Protection (DEP), conditional approval letter, submitted in response to a July 2016 protocol, submitted for testing various sources for RACT II (and for some sources, also for Title V), with those testing programs having been conducted in the last quarter of 2016. The test report is